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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kenji Yasuda

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EXAMINER

HENKEL, DANIELLE B

ART UNIT

PAPER NUMBER

1797

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,756	<b>Applicant(s)</b> YASUDA ET AL.	
	<b>Examiner</b> DANIELLE HENKEL	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 21-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed June 29, 2009 has been entered and fully considered.
2. Claims 1-20 were cancelled and claims 21-42 are pending.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 21-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over MORIGUCHI (May 2002) in view of YAMADA (US 2003/0152756).

a. With respect to claim 21, MORIGUCHI teaches a micro-chamber for cell culture, which comprises a substrate which does not absorb light of a specific wavelength (glass slide), and an absorption layer which absorbs light of the specific wavelength (chromium layer) and a region made of a solid substance which does not absorb light of the specific wavelength and has a melting point lower than the boiling point of water (agar), both being laid over the substrate (Agar microchambers and Photo-thermal etching sections). MORIGUCHI does not explicitly disclose the absorption layer is disposed in the solid substance. However, YAMADA discloses a method of forming a substrate through with an absorption layer, transparent layer (solid substance doesn't absorb light, low melting point), glass substrate (does not absorb light) in which the absorption layer is between two transparent layers (disposed in solid substance) (0120, Figure 3). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the device of MORIGUCHI to include the absorption layer disposed in the solid substance as taught by YAMADA because it allows for both the layers to be removed by a one shot pulse radiation of the process laser light (0024).

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b. With respect to claim 22, MORIGUCHI teaches the absorption layer absorbs light of the specific wavelength as mentioned in the above rejections, but does not explicitly disclose the layer composed of fine particles. It would have been obvious to one having ordinary skill in the art at the time of the invention to use particles with the specified light absorption properties, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. The use of fine particles as the absorption layer would require less absorption layer material and therefore lower the manufacturing cost of the device.

c. With respect to claim 23, MORIGUCHI teaches the absorption layer is a thin film laid over the surface of the substrate and the region made of a substance having a melting point lower than the boiling point of water is formed over the absorption layer (Agar microchambers section and Figure 1) as does YAMADA (0120, 0135).

d. With respect to claim 24, MORIGUCHI teaches the thin film as the absorption layer has a thickness (5nm) permitting a transmittance of 50% or greater (>60%) to visible light (Photo-thermal etching section).

e. With respect to claim 25, MORIGUCHI teaches the absorption layer is a thin film pattern laid over the surface of the substrate and the line width of the pattern is narrower than the specific wavelength (Conclusion section).

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With respect to claim 26, MORIGUCHI teaches the solid substance having a melting point lower than the boiling point of water is specifically low-melting-point agar and that agar gel with a low melting point is important for non-destructive photo-thermal etching as it avoids damaging neighboring cells by the heat from the microchambers (Agar microchambers section). MORIGUCHI teaches the claimed invention except for a solid substance having a melting point not greater than 45 degrees Celsius. It would have been obvious to one having ordinary skill in the art at the time of the invention to choose a solid substance with a melting point not greater than 45 degrees C, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

f. With respect to claim 27, MORIGUCHI teaches the solid substance having a melting point lower than the boiling point of water is agarose (Agar microchambers section).

g. With respect to claim 28, MORIGUCHI teaches light of the specific wavelength is light from a 1064 nm Nd:YAG laser which is known in the art to have a wavelength not absorbed by water as evidenced in the Specification on page 10.

h. With respect to claim 29, MORIGUCHI teaches a micro chamber for cell culture, which comprises a unit of irradiating light of the specific wavelength capable of forming a space by heating and melting a region made of a solid

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substance which does not absorb light of the specific wavelength (Photo-thermal etching section).

i. With respect to claim 30, MORIGUCHI teaches the unit of irradiating light irradiates a focused beam (Figure 3, Photo-thermal etching section).

j. With respect to claim 31, YAMADA discloses the absorption layer is disposed in the transparent layer (solid substance) with a portion of the transparent layer separating the absorption layer from the substrate (see Figure 3 and 4).

k. With respect to claim 32, MORIGUCHI teaches a micro-chamber for cell culture, which comprises a substrate which does not absorb light of a specific wavelength (glass slide), and an absorption layer which absorbs light of the specific wavelength (chromium layer) and a region made of a solid substance which does not absorb light of the specific wavelength and has a melting point lower than the boiling point of water (agar), both being laid over the substrate (Agar microchambers and Photo-thermal etching sections). MORIGUCHI does not explicitly disclose two regions of solid substance. However, YAMADA discloses a method of forming a substrate through with an absorption layer, transparent layer (solid substance doesn't absorb light, low melting point), glass substrate (does not absorb light) in which the absorption layer is between two transparent layers (two regions of solid substance) (0120, Figure 3) wherein the region at a higher depth has a lower thermal diffusion rate (different melting point) than the region at a higher depth (0043). At the time of the invention it

would have been obvious to one of ordinary skill in the art to modify the device of MORIGUCHI to include the regions of different thermal diffusional rate as taught by YAMADA because it allows for the promotion of removal of the substance from the desired depth (0311).

l. With respect to claim 33, MORIGUCHI teaches the absorption layer is a thin film laid over the surface of the substrate and the region made of a substance having a melting point lower than the boiling point of water is formed over the absorption layer (Agar microchambers section and Figure 1). YAMADA also discloses the absorption layer is a thin film that is disposed between two transparent layers (first region formed over film) (0120, Figure 3, and 0135).

m. With respect to claim 34, MORIGUCHI teaches the thin film as the absorption layer has a thickness (5nm) permitting a transmittance of 50% or greater (>60%) to visible light (Photo-thermal etching section).

n. With respect to claim 35, MORIGUCHI teaches the absorption layer is a thin film pattern laid over the surface of the substrate and the line width of the pattern is narrower than the specific wavelength (Conclusion section).

o. With respect to claim 36, MORIGUCHI teaches the solid substance having a melting point lower than the boiling point of water is specifically low-melting-point agar and that agar gel with a low melting point is important for non-destructive photo-thermal etching as it avoids damaging neighboring cells by the heat from the microchambers (Agar microchambers section). MORIGUCHI teaches the claimed invention except for a solid substance having a melting point



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not greater than 45 degrees Celsius. It would have been obvious to one having ordinary skill in the art at the time of the invention to choose the first or second solid substance with a melting point not greater than 45 degrees C, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

p. With respect to claim 37, MORIGUCHI teaches the solid substance having a melting point lower than the boiling point of water is agarose (Agar microchambers section) therefore it would be obvious to make either the first or second solid substance agarose.

q. With respect to claim 38, MORIGUCHI teaches light of the specific wavelength is light from a 1064 nm Nd:YAG laser which is known in the art to have a wavelength not absorbed by water as evidenced in the Specification on page 10.

r. With respect to claim 39, MORIGUCHI teaches a micro chamber for cell culture, which comprises a unit of irradiating light of the specific wavelength capable of forming a space by heating and melting a region made of a solid substance (first or second) which does not absorb light of the specific wavelength and has a melting point lower than the boiling point of water (Photo-thermal etching section).

s. With respect to claim 40, MORIGUCHI teaches the unit of irradiating light irradiates a focused beam (Figure 3, Photo-thermal etching section).

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t. With respect to claim 41, YAMADA discloses the region at a higher depth has a lower thermal diffusion rate (different melting point) than the region at a higher depth (0043) because it allows for the promotion of removal of the substance from the desired depth (selective melting) (0311).

u. With respect to claim 42, YAMADA discloses the first and second regions are distinct and the first region is disposed over the second region (laminated structure, see Figure 3 and 4).

### ***Priority***

7. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 21-42 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIELLE HENKEL whose telephone number is (571)270-5505. The examiner can normally be reached on Mon-Thur: 11am-8pm, Alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Marcheschi can be reached on 571-272-1374. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DANIELLE HENKEL/  
Examiner, Art Unit 1797

/Michael A Marcheschi/  
Supervisory Patent Examiner, Art  
Unit 1797